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Special Report PI103

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THE ECONOMIC IMPACT OF THE EAST HELENA SMELTER

The American Smelting & Refining Company * (ASARCO)

(A With- and Without- Analysis)

Department of Intergovernmental Relations
Information Systems Bureau
Division of Research and Information Systems
State of Montana

Frank McChesney
Director

January, 1974
Helena, Montana

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The economic impact of the East Helena Smelter, the American Smelting and Refining Company (ASARCO): (a with- and without analysis)

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PREFACE

Economic impact analyses are of two general kinds: those that study actual or potential effects of an addition to the economy, and those that measure the impacts of losing a segment of the economy. This study is one of the latter. One purpose of the investigation was to develop a methodology for studying economic impact that could be applied to similar situations elsewhere in Montana.

This report represents an on-going effort to realize the potential of an extraordinarily useful computerized information file acquired for the state, known as the Regional Economic Information System, or REIS file. It is described in some detail in Appendix A (a separate document).

The method selected for this study was the "with-and-without" analysis; that is, describing the economy of a selected community by use of the REIS data, projecting it a short period into the future, then in effect removing one industry from that economy and tracing the direct and indirect effects on the same measures (earnings and employment) used in the original description and projection.

The community selected for initial study was the two-county area of Lewis and Clark and Jefferson Counties, and the industry was the East Helena plant of the American Smelting and Refining Company, known as ASARCO.

There were a number of reasons for this selection. The size of this plant in relation to the rather small number of manufacturing firms in the community made it comparatively easy to study the interrelationships between ASARCO and its suppliers. Since virtually all of its primary product is exported, the examination of economic relationships with local customers was made quite simple. Also, the prospects for loss of this plant to the local economy are real enough to make the study much more than a mere academic exercise.

An investigation conducted by Arther D. Little, Inc. in 1972 for the Environmental Protection Agency shows that of the 6 lead-producing plants in the Western U.S.A., this ASARCO plant is the one most greatly affected, in terms of capital requirements and operating costs, by pollution abatement requirements.

These requirements, the report says, "will severely affect the East Helena Smelter... Even if (it) were to give up its profit to lessen the cost impact on mines, (that impact) would still be quite high. Because this plant is a custom smelter which imports a significant portion of its concentrate input, it could lose a significant portion of raw material sources and be forced to shut down."

The same study concluded that loss of the smelter would not seriously affect lead and zinc supplies and operations nationwide; but, as this study shows, the seriousness of the impact on the local economy is another matter.

This study was not designed to measure costs of detectable environmental degradation resulting from emissions by this or associated manufacturing plants, on the assumption that such analysis has been or will be done by appropriate environmental agencies. It is these costs compared with losses that would follow plant closure, that constitute the tradeoffs which must be evaluated by state government and the community in order to make realistic decisions.

The methodology for the study was adapted by Norm Larson who had specific responsibility for the project and did the research and analysis under the direction of R. Thomas Dundas, Jr. Computer manipulation of the REIS magnetic tapes was handled by Gary Rogers. Dick Dodge provided statistical advice on projections.

Completion of the project required the cooperation of many people in the community and elsewhere. Messrs. Stan Lane, Plant Manager, and Claude DeGooyer, Chief Accountant, and their staff provided detailed information on ASARCO plant operation. In the American Chemet Company, President Hoyt Larrison, Senior Vice President Bill Porter, and Treasurer Joe Schell, provided valuable information, as did Mr. Richard Porte, President of Caird Engineering, and Mr. Bill Taylor of the Burlington Northern Railroad. Other businessmen in the area furnished similar information on the relationships of their firms with the ASARCO operations.

Acknowledgement is also due for the valuable assistance provided by the Regional Economics Division, U.S. Department of Commerce. Dr. Bob Graham, Bureau of Economic Analysis, gave advice on methodology; Ed Coleman and his staff on the Measurement Branch supplied the REIS data; and Dr. Dan Garnick and others in the Analysis Branch provided advice on the use of location quotients and multipliers.

Helpful comments on the approach and methodology during early phases were furnished by Mrs. Maxine Johnson of the University of Montana, and Dr. Dick McConnen of Montana State University.

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Technical Appendix

The technical appendix containing the methodology used in the study is a separate document and is available on request.

This report was financed in part through a grant from the U.S. Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1954, as amended.

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SUMMARY

The American Smelting and Refining Company's (ASARCO) basic metals smelter in East Helena represents the main reason for the existence of at least two additional export based manufacturing facilities: American Chemet, Inc. and the foundry portion of Caird Engineering, Inc.

The hypothetical withdrawal of the ASARCO Smelter from the area economy on January 1, 1973, and the subsequent departure of other dependent manufacturing operations by January 1, 1974, amounts to the direct income and employment effects of 330 full and part-time jobs and $3,803,748 in earnings for 1974. The indirect employment and income effects of these export manufacturing firms would mean an additional 693 full and part-time jobs, and $6,428,334 in earnings for 1974 throughout the community.

The economic impact on the Lewis and Clark/Jefferson County area and the state for 1974 would be a projected reduction of 1,023 full and part-time jobs and $10,232,082 in earnings without the ASARCO smelter and related facilities in the economy.

Annual earnings per worker for the firms affected by the presence of ASARCO average about $9,810, while for the two-county economy as a whole, the corresponding average is $7,110, or $2,700 less per worker.

Without ASARCO in the economy there would be a lowering of the average annual earnings per worker -- from $7,110 to $6,980 in 1973, and from $7,370 to $7,230 in 1974. These amounts represent a significant portion of earnings and employment in Lewis and Clark and Jefferson Counties: 1 out of 20 jobs or 5% of total employment and $1 out of $15 of earnings or 6.8% of total earnings for 1974.

Without the three export-oriented manufacturing facilities and some of the dependent non-export manufacturing establishments in the area, there would be a reduction of 40% to 50% in total job and earnings in the community's manufacturing sector. In the event of withdrawal of these manufacturing operations from the community, the local economy would become much more dependent on the non-goods producing sectors, such as government and the service industries.

Statewide, the economic impact in the event of ASARCO's closing is, of course, much less significant. In 1974, the $10 million in earnings and the 1,023 jobs related to the ASARCO Smelter would cut only a small slice out of the state's economic growth. However, the lack of economic diversity has been a serious economic problem in the state. Removal of these manufacturing plants from the state's economy would only increase dependence on the non-goods producing sectors and agriculture.

The East Helena ASARCO facility is an unusual plant in Montana. Almost 70% of the "basic metals" it uses come from sources outside of the United States, and Montana supplies less than 2% of the total. Since these concentrates and ores must be purchased on the international metals market, the East Helena Plant is independent of local or regional natural resources.

This is an economic advantage for the Lewis and Clark/Jefferson County area, and Montana, because in the event of a decline in the natural resource-economic base (agriculture, wood products, metal mining, etc.), this plant will continue to generate jobs and earnings in the community. Thus, the East Helena Smelter of ASARCO provides the local and state economies with a measure of security against the debilitating effects of a decline in the natural resource-economic base.

EMPLOYMENT AND EARNINGS EFFECTS

What are the employment and earnings effects on the Lewis and Clark/Jefferson County community area and the State of Montana, with and without the East Helena ASARCO Plant? Illustrating the contribution of ASARCO to the State and local economies required projections of employment and earnings for 1972, 1973 and 1974. A straight line projection (linear least squares) method was used for simplicity and ease of understanding.[1]

Economic Indicators

The projections were made with the assumption the plant would continue operation. Then the total amount of affected earnings and employment in the communities was computed and subtracted from the projected figures (with ASARCO) to obtain earnings and employment without ASARCO operating in East Helena.

Section II, Inter-industry Relationships, considers the relationship of ASARCO to its supplier forms and to its sales customers, both inside and outside the state. It also includes the amounts of export and non-export jobs and income affected by the ASARCO Plant.[2]

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[1] Appendix D contains projections methodology.

[2] Export or primary employment and earnings are those jobs and dollars created as a result of production of goods and services which are consumed outside of the community or by non-residents of the community. Non-export or residentiary industries are those industries which produce goods or services just for local consumption. They may include city-county government, retail trade, services, a creamery or printing operation.

Affected export earnings and employment are derived as a result of the inter-industry analysis and are summarized in Tables 1 and 2 on page 10. The non-export or residentiary earnings and employment effects are measured by use of multipliers. These multipliers quantify non-export industry changes that occur as a result of primary industry changes within the community.

The multipliers are used to project changes in residentiary industries in the Lewis and Clark/Jefferson County area that probably would occur as a result of alterations in employment and earnings at the ASARCO Plant. These non-export industries and companies include the Burlington Northern, Chemetron, and Maronick Construction, as well as groceries, service stations, hardware stores, professionals and the other retail and service businesses in the community.

The multiplier is derived by dividing total employment or earnings by total export employment or earnings. The result is called an export industry multiplier.[3]

The earnings and employment multipliers for the Lewis and Clark/Jefferson County area are 2.69 and 3.10 respectively.[4] They indicate that for every dollar of primary industry earnings an additional $1.69 in earnings are generated, and for every primary industry full and part-time job, an additional 2.10 full and part-time jobs are sustained in the community.

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[3] There are other types of multipliers. Another type commonly used is an input-output multiplier. This type uses sales, purchases and value added by industry, as well as in the aggregate, to determine the effects of an industry on the community. A discussion of the techniques is contained in Appendix B.

[4] Derivation of the multipliers is contained in Appendix C.

With ASARCO

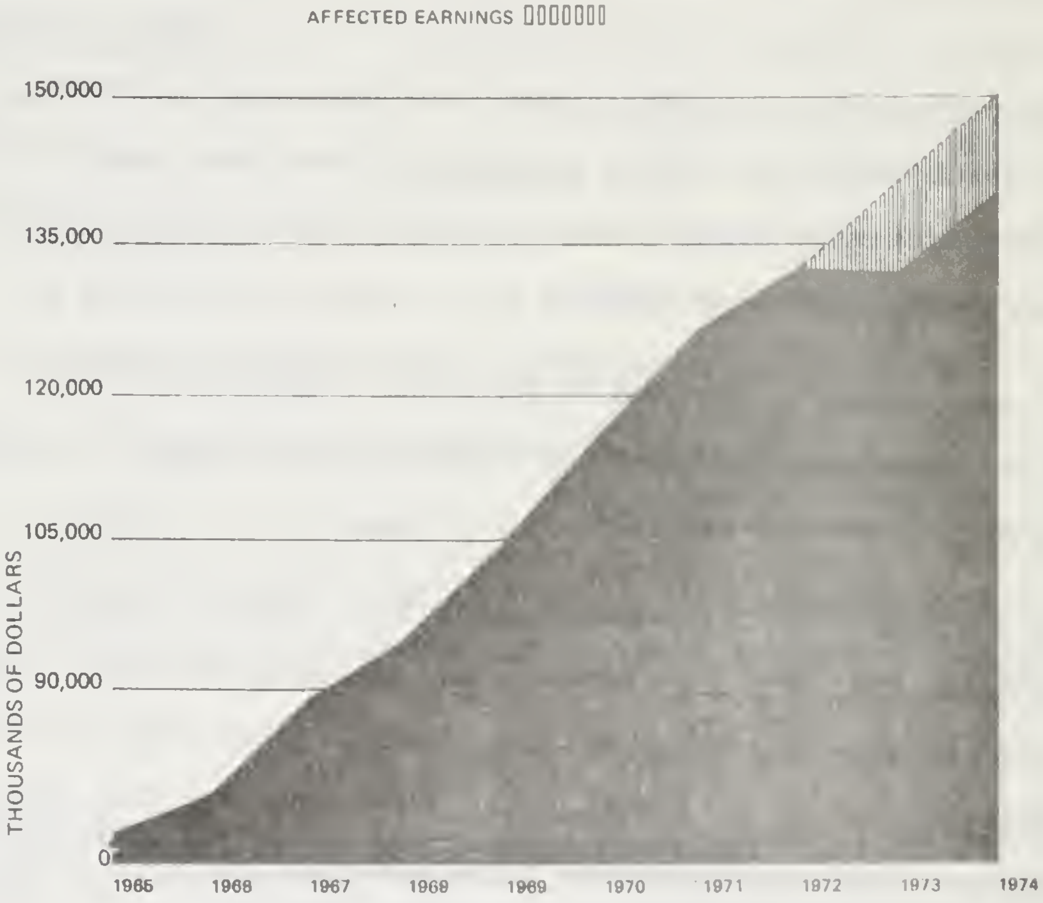
Projected earnings in the combined Lewis and Clark/Jefferson County areas with ASARCO operating would be $141,418,000 in 1973 and $150,100,000 in 1974. Figure 1, below, indicates the community area earnings with ASARCO.

Figure 2 (Page 7) indicates projected employment in these two counties with the plant operating would be 19,878 in 1973 and 20,375 in 1974. These projections reflect past rapid expansion of both employment and earnings in both counties.

COMBINED LEWIS & CLARK AND JEFFERSON COUNTY EARNINGS
AND PROJECTED EARNINGS 1965–1974

IN THOUSANDS OF DOLLARS

FIGURE 1



	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Earnings	75,008	79,165	89,365	95,308	104,855	116,116	126,245	132,736	141,418	150,100
Earnings With Shutdowns									131,936	139,868
Affected Earnings									9,482	10,232

Note: Projected Figures in Bold Face.

PROJECTIONS BASED ON U.S. DEPARTMENT OF COMMERCE – BUREAU OF ECONOMIC ANALYSIS DATA

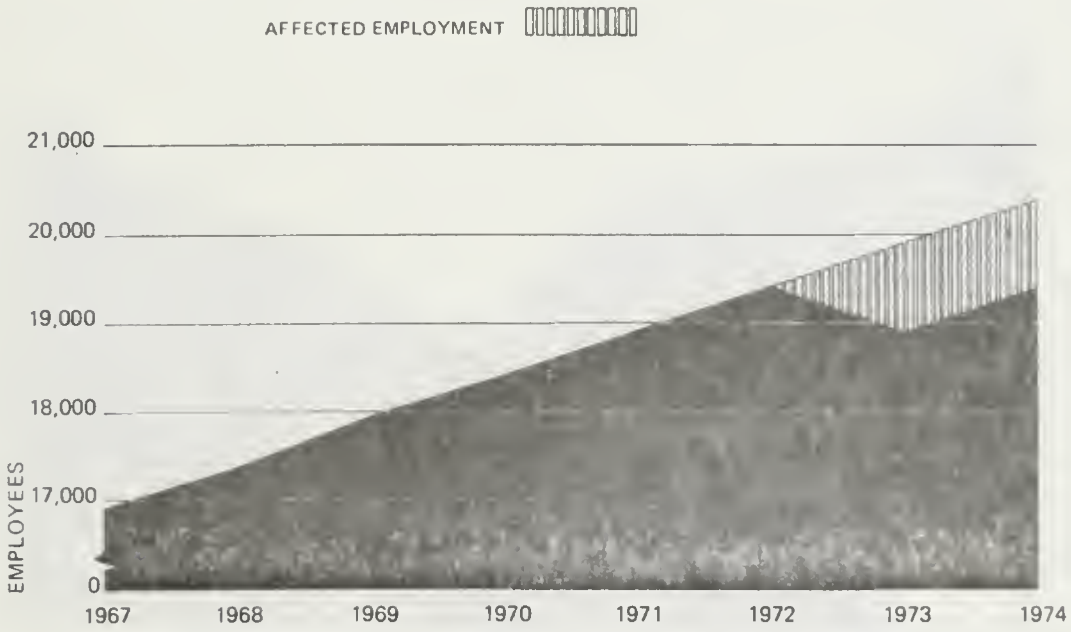
For Montana, the projections indicate that with ASARCO in the community, earnings would be $2,116,480,000 in 1973, and $2,213,000,000 during 1974. (See Figure 3, Page 8). Employment projections for the state with ASARCO operating indicate employment would be 284,053 in 1973 and 286,232 in 1974. (See Figure 4, Page 9).

Without ASARCO

Measurement of the total area employment and earnings effects without ASARCO operating first requires a determination of which firms would be directly and indirectly affected.

FIGURE 2

COMBINED LEWIS & CLARK AND JEFFERSON COUNTY EMPLOYMENT AND PROJECTED EMPLOYMENT 1967-1974*



	1967	1968	1969	1970	1971
EMPLOYMENT	16,940	17,306	17,955	18,329r	18,913p

	1972	1973	1974
Employment Projections	19,381	19,878	20,375
Employment with Shutdowns		18,911	19,352
Affected Employment		967	1,023

p - Preliminary

r - Revised by Regional Economics Division

*Includes both full- and part-time employment.

PROJECTIONS BASED ON U.S. DEPARTMENT OF COMMERCE--BUREAU OF ECONOMIC ANALYSIS DATA

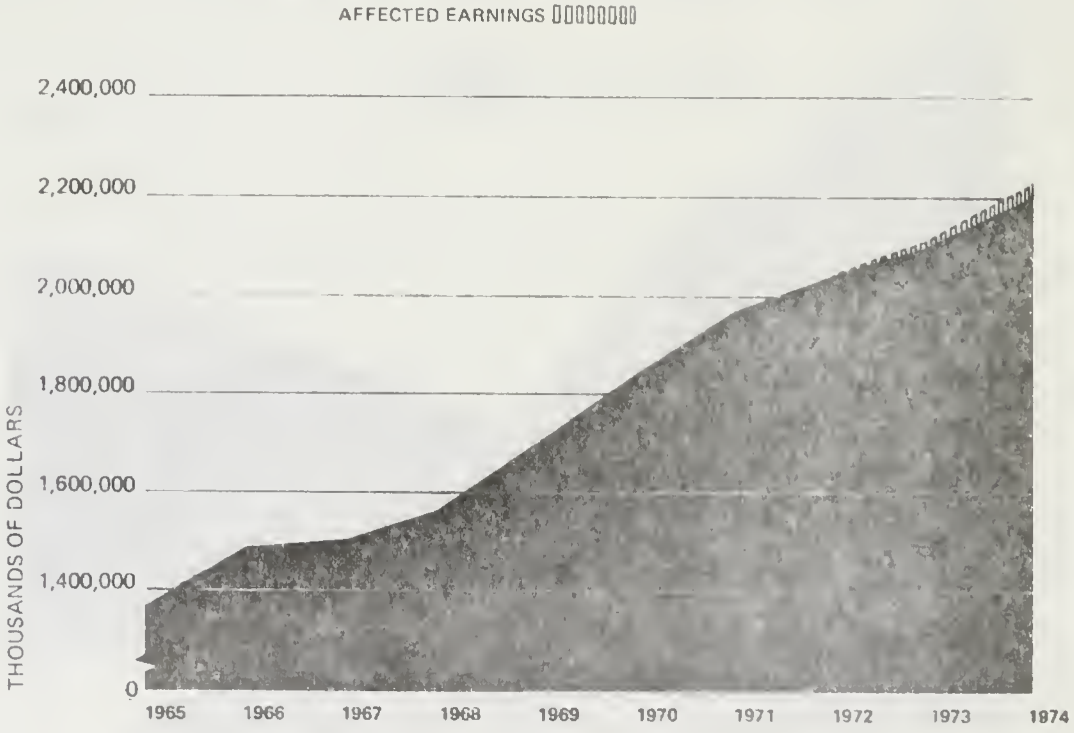
To measure the effects on the economy it was assumed that the ASARCO Plant would be "removed" on January 1, 1973. As is described in the Inter-industry Relations Section, Pages 23 and 24, two additional export-oriented firms, American Chemet and Caird Engineering, in Lewis and Clark County are dependent on the ASARCO facility.

The time sequence of these additional closings, was assumed to be: American Chemet's zinc oxide operation and Caird Engineering's foundry operation would discontinue operations at the same time as the ASARCO plant, while the copper oxide operations of Chemet would cease one year later.

MONTANA EARNINGS AND PROJECTED EARNINGS 1965–1974

IN THOUSANDS OF DOLLARS

FIGURE 3



	1965	1966	1967	1968	1969	1970	1971
Earnings	1,368,887	1,487,357	1,500,211	1,562,998	1,704,787	1,841,672	1,965,177

	1972	1973	1974
Earning Projections	2,019,760	2,118,480	2,213,200
Earnings With Shutdowns		2,108,998	2,202,968
Affected Earnings		9,482	10,232

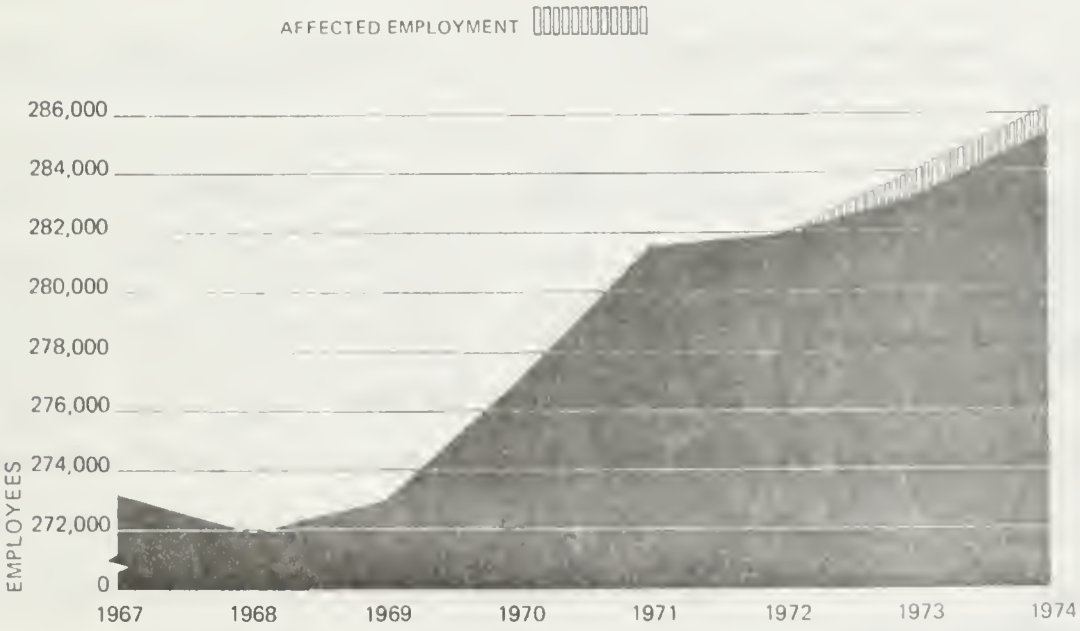
PROJECTIONS BASED ON U.S. DEPARTMENT OF COMMERCE – BUREAU OF ECONOMIC ANALYSIS DATA

Tables 1 and 2 (Page 10) summarize the export earnings and employment from export-oriented firms which would be lost to the community economy during 1973 and 1974. Once the amounts of export earnings and employment have been determined, applying the derived multipliers determines the amount of non-export or residentiary earnings or employment affected in the community.

The sum of affected export earnings or employment and non-export earnings, or employment, equals the total amount of affected earnings or employment (See Table 2, Page 7).

FIGURE 4

MONTANA EMPLOYMENT AND PROJECTED EMPLOYMENT 1967 1974*



	1967	1968	1969	1970	1971
EMPLOYMENT	273,178	271,983	272,993r	276,950r	281,950p

	1972	1973	1974
Employment Projections	281,874	284,053	286,232
Employment with Shutdowns		283,086	285,209
Affected Employment		967	1,023

p Preliminary

r Revised by Regional Economics Division

*Includes both full and part time employment

PROJECTIONS BASED ON U.S DEPARTMENT OF COMMERCE – BUREAU OF ECONOMIC ANALYSIS DATA

The amount of earnings affected by the ASARCO Plant in East Helena in the Lewis and Clark/Jefferson County area is illustrated in Figure 1 (Page 6).

Without ASARCO operating an earnings loss of more than $10 million would occur in 1974. This means, based on the assumptions, that instead of earnings growing to $141,418,000 in 1973, they would decline to $131,936,000. Likewise, projected 1974 earnings would reach $139,000,000 instead of $150,000,000. This represents a 6.8% loss of earnings in the two-county area in 1974.

TABLE 1

AFFECTED EXPORT EARNINGS AND EMPLOYEES

(ACTUAL)

AFFECTED EARNINGS*

	1973	1974
ASARCO - Total Labor Costs (1)	$3,294,125	$3,294,125
American Chemet - Total Labor Costs (1) (Zinc Fume Plant)	111,282	111,282
Caird Engineering - Earnings* (1) (Foundry Only)	119,315	119,315
American Chemet (Copper Oxide Plant) (1) Total Labor Costs	———	279,026
Total:	$3,524,722	$3,803,748

*Earnings are wages and salaries, other labor cost (fringe benefit costs), and net income (proprietors).

AFFECTED EMPLOYEES

	1973	1974
ASARCO	292	292
American Chemet (Zinc Fume Operation Only)	12	12
Caird Engineering (Foundry Operation Only)	8	8
American Chemet (Copper Oxide Plant)	—	18
Total:	312	330

(1) Permission to publish obtained from the Company.

TABLE 2

COMPUTATION OF AFFECTED EMPLOYMENT AND EARNINGS

(ACTUAL)

	Employment		Earnings	
Lewis & Clark/ Jefferson	1973	1974	1973	1974
Primary/Export	312	330	$3,524,722	$ 3,803,748
Multiplier	1:2.10	1:2.10	1:1.69	1:1.69
Non-Export/ Residentiary	655	693	5,956,780	6,428,334
Total:	967	1,023	$9,481,502	$10,232,082

With ASARCO operating, earnings in the area would increase by $17,360,000 from 1972 to 1974. Without the smelter, projected earnings would grow only $7,132,000 in the combined Lewis and Clark/Jefferson County area in the same period.

Full and part-time employment in the combined counties is projected at 19,352 in 1974 without the plant. (See Figure 2, Page 7). This would be 1,023 fewer jobs than with the plant.

Without ASARCO in the community, the combined counties would experience a decline in the number of full and part-time people employed from 19,381 in 1972 to 18,911 in 1973. By 1974 employment levels would begin to approach only those already reached in 1972.

The data in Figures 1 and 2 (Page 6 and 7) illustrate another effect on income that could be expected. Annual earnings per worker for the firms affected by the presence of ASARCO (shown by the 1973 figures) average about $9,810, while for the two-county economy as a whole, the corresponding average is $7,110, or $2,700 less per worker. The withdrawal of the plant and other affected industrie from the community's economy would thus have the effect of lowering the average annual earnings -- from $7,110 to $6,980 in 1973, and from $7,370 to $7,230 in 1974.

In terms of the economy's structure, it appears that 40% to 50% of the total manufacturing jobs and earnings would be lost in the Lewis and Clark/Jefferson County areas. In 1971, the manufacturing sector in Lewis and Clark County generated 7.5% of the total county earnings.

Economic adjustment (shift and change in the economy) is not new to Montana, and is well illustrated by the numerous agricultural and mining communities depopulated by dependence on one, or a few industries. Lewis and Clark/Jefferson Counties' dependence on government, services and transportation, communication and public utilities sectors would increase as a result of withdrawal of these manufacturing operations.

In Figure 3 (Page 8) the projected effects of an ASARCO closure on Montana as a whole are shown to be relatively small. Based on current trends, and with the ASARCO Plant operating, the state would record earnings of $2,213,000,000 for 1974. Without the ASARCO Plant, there would be a $10,000,000 drop in statewide earnings and total earnings would be about $2,203,000,000 in 1974.

Statewide employment effects would also be comparatively small, with a projected loss of 1,023 jobs during 1974. (See Figure 4, Page 9). Based on current trends and with ASARCO operating, employment in the state in 1974 would be 286,232. Without the Plant in the state, 1974 employment would be 285,209.[5]

Earnings and employment growth in the absence of the ASARCO Smelter, while only slightly flattening out Montana's economic growth rate, would reduce the important of an already small manufacturing sector.

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[5] The statewide amounts of affected jobs and earnings are slightly conservative for several reasons. Only the effects of ASARCO in Lewis and Clark and Jefferson Counties were quantified. In addition, ASARCO's 1972 numbers were used which slightly understates 1973 and 1974 amounts of affected employment and earnings. Lastly, the multipliers are based on 1970 data but their computation reflects four previous years' economic data.

The earnings gap between Montana and the rest of the nation has been widening, and structurally, Montana's manufacturing sector is already very small relative to the nation. Further reduction of this important sector would increase the state's dependence on agriculture, mining, services and government.

Removing the employment and earnings contribution of a manufacturing establishment would not help Montana, and would only aggravate the economic problems from which it currently suffers, and which it seeks to solve.

INTER-INDUSTRY RELATIONSHIPS

Analyzing and understanding the inputs (purchases) ASARCO uses to produce its products, where they come from, as well as the final products of the plant (outputs), and their geographical destinations provides the information needed to make a factual economic analysis of ASARCO's impact.

ASARCO - The Company

The American Smelting and Refining Company (ASARCO) plant at East Helena was established in 1888 to service the growing mining industry of the Helena region. The plant was constructed and owned by the Guggenheim investor group of New York and sold to ASARCO shortly after the turn of the century.

Originally the smelter refined crude ore and concentrates from local operations. As time passed, local sources dried up, and the plant slowly changed from a local customer crude ore smelter to an international custom smelter, using primarily high grade concentrates from other mines worldwide.

In 1972, the zinc fume operation of the Anaconda Company at East Helena was purchased by ASARCO. Thus, the company's East Helena facilities now include a lead smelter and a zinc fume operation.

Currently, many non-ASARCO owned metal mining concerns throughout the world send their concentrates to East Helena to extract metals which cannot be efficiently extracted in their own plants. This fact makes the East Helena Smelter unusual in terms of providing smelter services. Competitor plants are located at Bunker Hill, Idaho; Ghent, Belgium, and in West Germany.

Now, the only crude ore the smelter uses comes from Montana and Idaho mines. While crude ore amounts are small relative to the total metal charge used in the plant, ASARCO's crude ore purchases sustain many small local mining concerns.

ASARCO Inter-Industry Relationships

Several Lewis and Clark and Jefferson County businesses have been dependent upon the East Helena Plant for many years. This analysis discusses these relationships and describes ASARCO's business relations in the rest of Montana, the United States and throughout the world, by value of inputs and outputs.

The ASARCO inter-industry flow chart shown in Figure 5 (Page 17), describes the firm's inputs and outputs. The value of inputs equals the value of outputs. Outputs represent total sales value, and inputs include value of intermediate products (basic metals, coke and coal, etc.) plus value added (total labor costs depreciation and corporate profits, etc.). Undistributed corporate profits are included in the value of inputs, but they are not specifically listed. All of the data were furnished by the accounting department of the ASARCO Plant in East Helena.

"Basic metals" (metal ores) constitute 85.1% of the total value of ASARCO's inputs as shown in Figure 5 (Page 17). About 57% of the total are from foreign sources, mostly South America, Australia and Canada. Montana and the rest of the United States provide ores representing 1.5% and 26% respectively, of the total.

Among the basic metals alone, 67.7% come from outside the U.S., 30.5% from within the U.S. other than Montana, and 1.8% come from within the state.

The value of coke and coal represent 2.3% of the total value; coal coming from mines in Utah and the coke from Canada. Limerock, barren silica, scrap iron, natural gas, electricity, and oxygen are all provided by Montana firms. Together, these particular Montana products represent 1.1% of the total value of inputs.

Transportation costs are another important input. ASARCO, and/or the basic metal suppliers expend considerable sums of money to bring ore and other products to East Helena. Ocean shipping expenses represent a significant portion of transportation costs of foreign inputs. However, rail charges are the largest portion of total input transportation costs.[1]

Total labor costs, property taxes and capital consumption allowances (depreciation) represent 4.4% of the total value. The total labor costs represent both total wages and other costs (pension, health, etc.). ASARCO's health plan alone, contributed over $227,000 in 1972 to Lewis and Clark County

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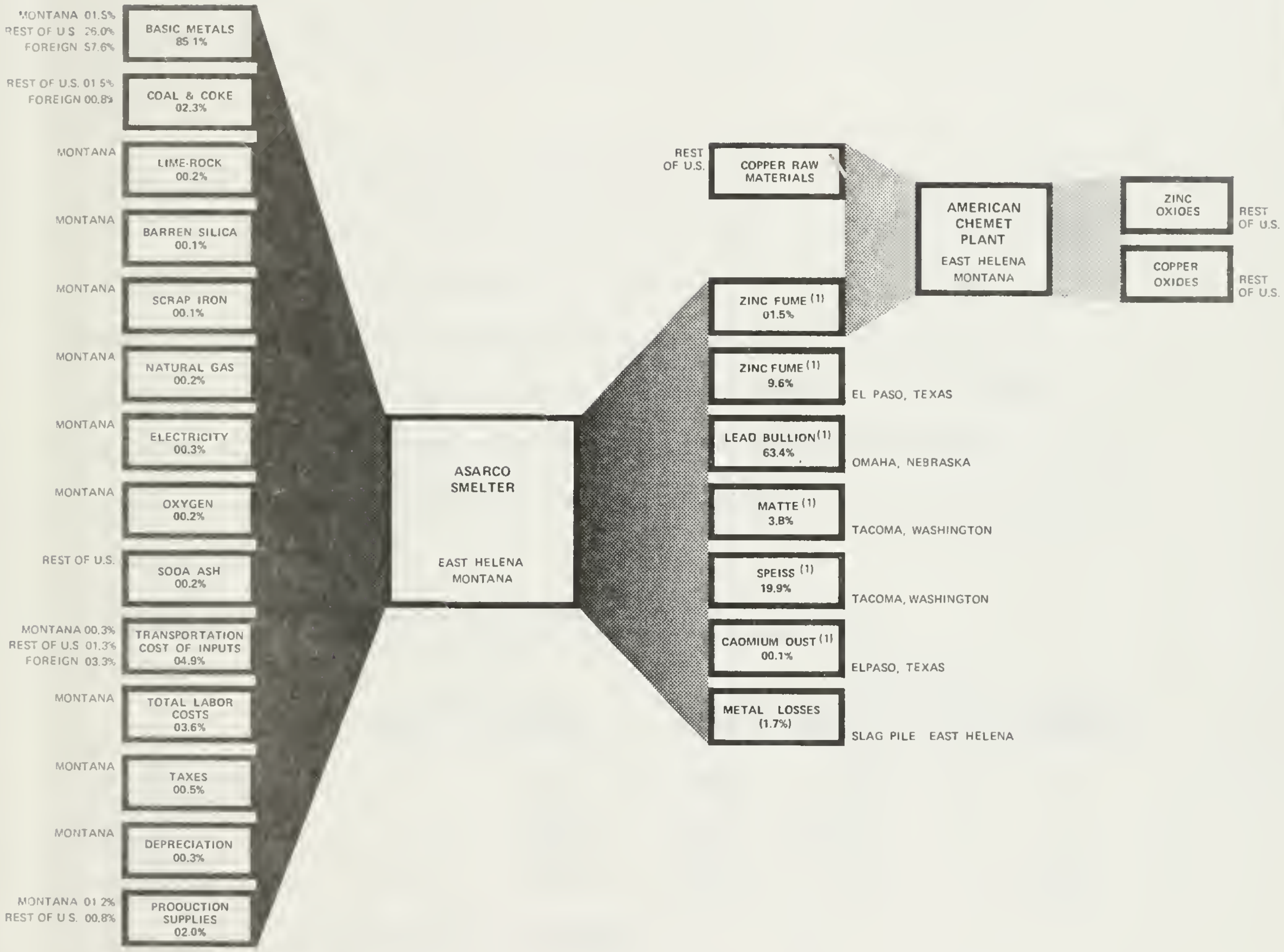
[1] For a detailed discussion of the railroad contribution, see Burlington Northern Section of Inter-industry Relationships.

FIGURE 5

ASARCO INTER-INDUSTRY FLOW CHART BY VALUE OF PRODUCT AND GEOGRAPHIC AREA, 1972 PERCENT OF TOTAL VALUE



( ) = Loss

(1) For a detailed description of metallic content see Table 1.

Source. Based on accounting data furnished to Information Systems Bureau, Division of Planning and Economic Development, Department of Intergovernmental Relations by ASARCO.

physicians, hospitals and other health-related practitioners and facilities.[2]

Supplies, which range from Caird Engineering foundry castings and fabricated metals to hardware from Montana Hardware, represent 2% of the total value of inputs. Most of these are provided by Montana suppliers scattered throughout the state.

Virtually all of ASARCO's output goes out of state. In 1972, 96.8% of the total products went to various ASARCO facilities elsewhere in the United States. Of the remainder, 1.5% went to the American Chemet facility in East Helena, and a portion, 1.7%, was lost in the smelting process and ended up in the slag pile in East Helena as unrecoverable minerals. In Table 3 (below) a breakdown of the metallic content of ASARCO's output is shown.

Table 3 Metallic Content of ASARCO Output
Ounces Per Ton and Percent Per Ton

	Oz/Ton		%/Weight			
	Gold	Silver	Lead	Copper	Zinc	Cadmium
Zinc Fume	--	3	9.3	.06	66.9	--
Lead Bullion	1.9	318.0	97.2	.01	--	--
Matte	.1	93.0	7.8	44.9	--	--
Speiss	4.3	422.0	8.7	60.0	--	--
Cadmium Dust	10.3	6.9	23.7	.4		19.9

Source: Data Provided by ASARCO

Totaling the percentage value of inputs and outputs shows that Montana sources provide only 8.5% of the total value of

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[2] Permission to publish obtained from company.

inputs, and that ASARCO supplies only 1.5% of its total product output to Montana businesses. Assuming the total value of ASARCO's inputs and outputs were 100 million dollars, this would mean $8.5 million in inputs would be purchased by ASARCO in Montana and $1.5 million of ASARCO output would be sold to the Montana firms.

The largest portion of Montana inputs is the labor contribution, as shown in Figure 6 (Page 20). The total labor costs (wages and salaries, pension costs, etc.) represented 41.2% of the total value of Montana inputs in 1972.

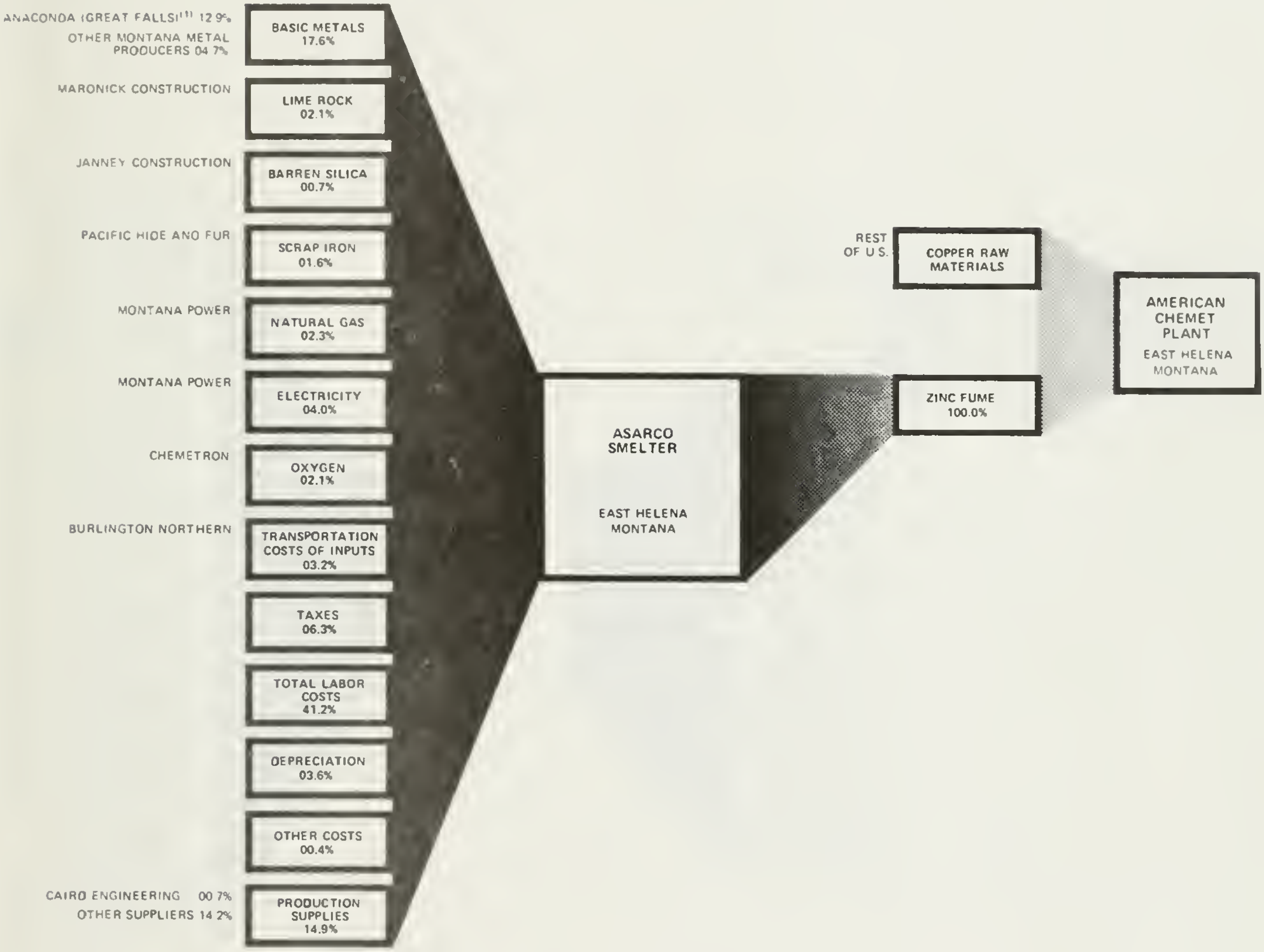
Basic metals from Montana represented 17.6% of the total value of inputs from Montana. Most of the metal was residue provided by the now closed Anaconda zinc plant at Great Falls. The loss of this Montana metals source forced ASARCO to seek new domestic and foreign sources.

ASARCO purchases a wide variety of items from Montana suppliers. The largest supplier, Caird Engineering, provides ASARCO with foundry castings, fabricated metal products and flat steel products. Other major suppliers are located in Butte, Missoula and other Montana cities, selling everything from hardware to industrial bearings.

Figure 7 (Page 21) illustrates the amounts of inputs provided and output produced in physical quantities (tonnages, kilowatt-hours, etc.). Tonnage-wise, Montana inputs of basic metals were larger than those from the rest of the United States.

FIGURE 6

ASARCO INTER-INDUSTRY FLOW CHART BY VALUE OF PRODUCT FOR MONTANA, 1972 PERCENT OF TOTAL MONTANA VALUE

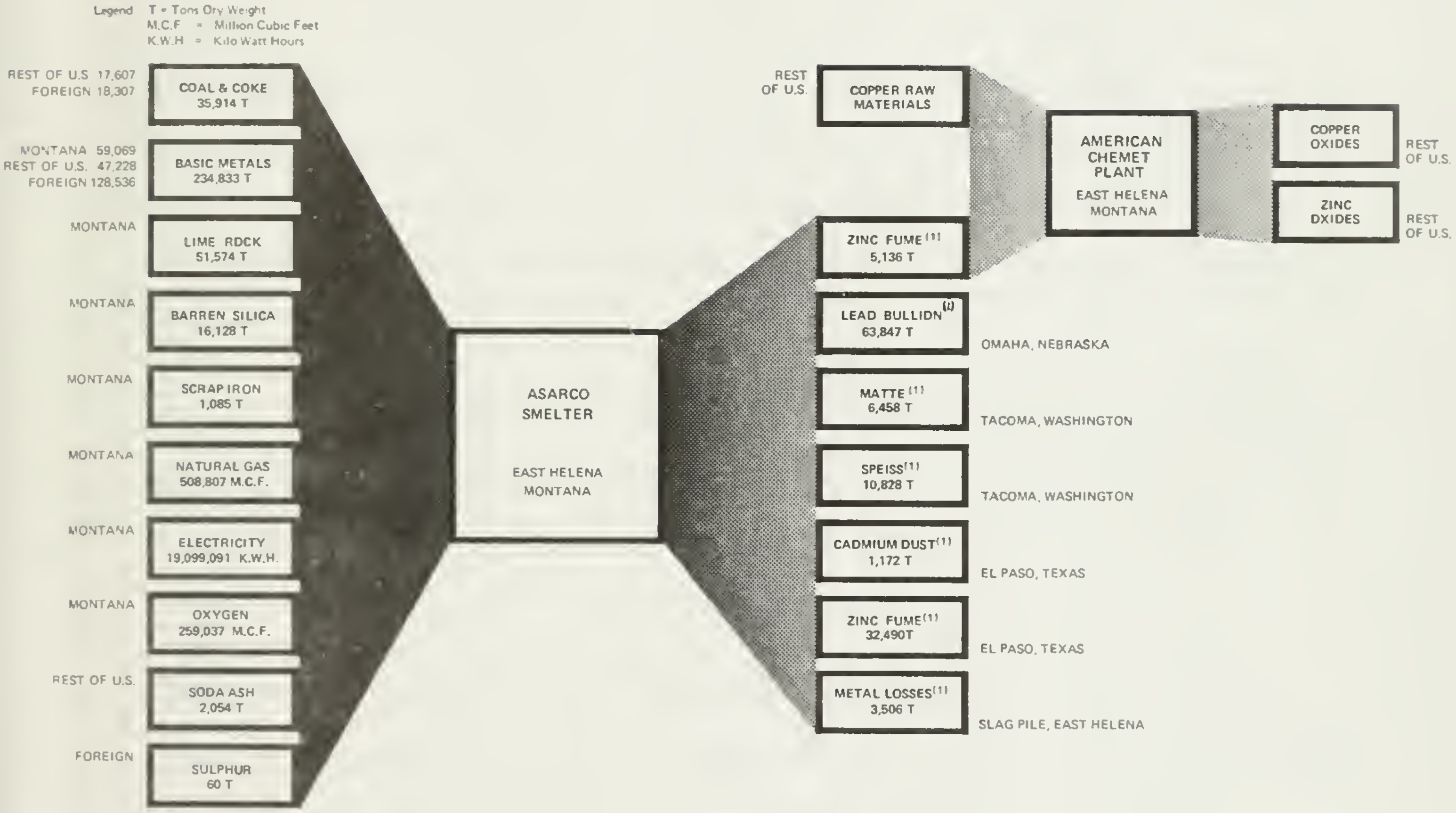


(1) Anaconda Zinc Plant Closed 1972 This represents a half year's supply to ASARCO.

Source Based on accounting data furnished to Information Systems Bureau, Division of Planning and Economic Development, Department of Intergovernmental Relations by ASARCO

FIGURE 7

ASARCO INTER-INDUSTRY FLOW CHART BY QUANTITY OF PRODUCT, 1972 (ACTUAL)



(1) For a detailed description of metallic content see Table 1.

Source: Based on accounting data furnished to Information Systems Bureau, Division of Planning and Economic Development, Department of Intergovernmental Relations by ASARCO.

The discrepancy between Montana tonnage and value is due to the weight/value relationships of low-value residues (from Great Falls) and Montana crude ore, versus more valuable metal concentrates from out-of-state smelters and concentrators.

The quantity of inputs and outputs suggests that transportation is important in ASARCO's operation. It is unusual that these large quantities of minerals can be shipped profitably from distant areas of the world to East Helena for processing. The reason probably lies in ASARCO's ability to extract metals from different concentrates at competitive prices more efficiently than other smelters around the world. From a community standpoint, this means the ASARCO Plant is not tied to a local or a regional natural resource base, such as mining, lumber, agriculture, etc.

In essence then, the ASARCO Plant, from an international business standpoint, is relatively sophisticated. It is efficient enough to be able to produce goods based on international competition, rather than on a local or regional economic advantage.

The plant is located in East Helena, not because of any inherent local or regional resource-economic factor, but principally because the cost of a new smelter at a more advantageous location is currently not financially feasible.

American Chemet

The American Chemet Company was formed in 1946 and operates a chemical manufacturing operation in East Helena. It originally utilized the output of the then Anaconda-owned zinc fume plant

in East Helena to produce zinc oxide, all of which was used either by the Columbia Paint manufacturing operation located in Helena or other U.S. paint manufacturers.

As time passed, petro-chemical solvent paints were replaced by water based paints and Chemet was forced to find new markets for its zinc oxide. These markets were found in the midwest in rubber-related manufacturing operations.

About the same time, Chemet began shipping copper raw materials from the Chicago and St. Louis areas to East Helena, where they were manufactured into copper oxide, then shipped back to the rubber markets outside Montana.

Prior to closure of the Great Falls zinc plant, dross (scum waste) was obtained from that source and processed by Chemet in East Helena. Since the Anaconda dross source was lost, a new one has not been located and that portion of American Chemet's business has been discontinued.

The reason for American Chemet's location in East Helena is because the basic materials to operate are located almost next door, at the ASARCO zinc fume plant. Withdrawal of the source of this basic input, zinc fume, would alter the reasons for the plant to be located in East Helena.

In fact, since most of Chemet's sales markets and all of its inputs would have to be purchased from out-of-state sources, the company would probably move its operation to a more advantageous location.

Caird Engineering

Caird Engineering operates the last of several non-captive foundries in Montana. It was established in 1894, in part to provide iron foundry and fabricated metal goods to the mining and smelting industry in the Helena region. With the closing over the years of many Montana smelters, Caird's foundry sales to smelters became dependent upon the ASARCO Plant at East Helena, its largest customer, for foundry work.

Should the ASARCO Smelter terminate operations, Caird's foundry would in all likelihood discontinue. The operation represents eight employees and approximately $119,000 in earnings.[3]

Burlington Northern

Burlington Northern's operations in Lewis and Clark County are centered primarily at the East Helena and Helena switchyards. Total rail freight revenue generated from the ASARCO and American Chemet manufacturing operations at East Helena in 1972 was $3,702,698 in-bound and $2,442,758 out-bound for a total of $6,145,456.[4] Discussions with ASARCO and Chemet officials indicates that nearly two-thirds of the total rail revenue accrues to Burlington Northern, or approximately $4 million.

Subsequent data furnished by Burlington Northern itemizes their rail revenue generated from ASARCO and American

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[3] Permission to publish obtained from the company.

[4] Based on input-output data furnished by ASARCO and American Chemet (Permission granted to publish).

Chemet plants in East Helena at $4,122,000.[5]

Without ASARCO and Chemet in East Helena there would be an elimination of the East Helena switch crew, an agent, a clerk and possibly the elimination of a Helena switch engine and crew. Based on the Burlington Northern information, six employees and about $74,000 in earnings (labor costs only) would be affected in the community.[6]

Chemetron

The Chemetron Corporation, Industrial Gases Division, operates an air separation plant in East Helena. It is capital intensive and highly automated, employing only two individuals. The plant manufactures oxygen, nitrogent and carbon dioxide. Currently, liquid and gaseous oxygen are the only marketable products. While the ASARCO purchases of oxygen are not large in terms of the total value of inputs, approximately 80% of Chemetron's total sales are to ASARCO.

Without the ASARCO Plant, in all probability the Chemetron separation plant would discontinue its operations.

Montana Power

The ASARCO Plant is a major user of electricity and natural gas supplied by the Montana Power Company. Based on accounting data furnished by ASARCO, Chemet and Caird, Montana Power's direct revenue from the ASARCO, Chemet and Caird foundry operations represents more than $500,000. The direct and indirect employment effects on the company caused by an ASARCO withdrawal are not known.

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[5] Permission to publish obtained from the company.

[6] Ibid.

Basic Metal Producers

The sources of basic metals inputs to ASARCO in 1972 are shown in Table 4 (Page 27). The former Anaconda plant in Great Falls provided 83% of Montana's metal tonnage used in the ASARCO smelting operation. The zinc plant in Great Falls closed in mid-1972, considerably lowering the amount of Montana metal available for processing that year.

The remainder of Montana's basic metal producers are principally part-time mining operations. The ASARCO facility is one of the few large smelters that accepts ores from small independent producers, and without it there would be little chance for the small operations to sell their ore. This would cause the closing of a number of these operations with subsequent loss of earnings and employment, especially in southwest Montana counties.

Maronick Construction

Maronick Construction has been quarrying, crushing and hauling limerock for the ASARCO operation since the turn of the century. In addition to the limerock operation, Maronick hauls about 27 tons daily of dezinced slag from the East Helena slag pile to the Kaiser plant for use in the cement manufacturing operation.

TABLE 4

MONTANA METAL RECEIPTS - ASARCO HELENA PLANT - YEAR 1972

BY DRY WEIGHTS

Shipper	Shipping Point	County	Class	Tons Dry Weight
Montana:				
Sam Mortenson	Sheridan	Madison	Crude	7
R. Robertson	Basin	Jefferson	Crude	1
John Caari	Clancy	Jefferson	Crude	5
E. Terry	Clinton	Missoula	Crude	2
Pete Antonioli	Butte	Silver Bow	Crude	459
Charles Kimball	Toston	Broadwater	Crude	29
Geo. Langstaff	Dillon	Beaverhead	Crude	10
Delbert Bullock	Basin	Jefferson	Crude	1,233
E. Merk	Deer Lodge	Powell	Crude	2
Basic Metal Mines	Rimini	Lewis&Clark	Crude	47
Hans Mo	Rimini	Lewis&Clark	Crude	2
W.W. Lindbom	Niarada	Sanders	Crude	2,821
John Byrd	Helena	Lewis&Clark	Crude	81
G. Doornbos	Gall. Gtwy.	Gallatin	Crude	11
A.K. Scharf	Deer Lodge	Powell	Au Nuggets	-*
United Invest.	Silver Star	Madison	Crude	8
C. Ward	Elliston	Powell	Crude	2
Helena Gun Club	Helena	Lewis&Clark	Gun Pellets	14
R. Pellny	Helena	Lewis&Clark	Crude	7
Lewis Const.Co.	Great Falls	Cascade	Cu Wire	2
C. Webber	Whitehall	Jefferson	Crude	11
Hans Mo	Rimini	Lewis&Clark	Crude	1
Manual Sakkinen	Superior	Mineral	Crude	49
Carl Brown	Bannack	Beaverhead	Crude	335
Glen Lince	Elliston	Powell	Crude	4
Pac. Mines Inc.	Alder	Madison	Crude	55
Kuebler & Trettin	Boulder	Jefferson	Crude	1,180
Harold Giulio	Boulder	Jefferson	Crude	3,368
W.A. Nagy	Huson	Missoula	Crude	1
Harper Bros.	Dillon	Beaverhead	Crude	12
Western Lab	Helena	Lewis&Clark	Scrap Lead	-*
Rudy Nygren	Argenta	Beaverhead	Crude	20
Ed Scheitlin	Alder	Madison	Crude	355
Western Lab	Helena	Lewis&Clark	Lab Sweeps	10
Rudy Nygren	Argenta	Beaverhead	Crude	7
St. James Hosp.	Butte	Silver Bow	X-Ray Silver	-*
Mico Enterprise	Helena	Lewis&Clark	X-Ray Silver	11
St.Johns Hosp.	Helena	Lewis&Clark	X-Ray Silver	-*
Mont.Deac.Hosp.	Great Falls	Cascade	X-Ray Silver	-*
St.Peters Hosp.	Helena	Lewis&Clark	X-Ray Silver	-*
Sub-Total				10,162
Secondary Metal Receipts from the Anaconda Co., Great Falls				49,447
Total Montana				59,609

*Less than 1 ton.
Source: Data provided by ASARCO.

The limerock quarry, located in Jefferson County, is owned by ASARCO and operated by Maronick. All quarrying is normally done during the winter months, employing five people, usually laid-off construction workers. All of the limerock goes to the ASARCO smelter, so the winter earnings of these people depend completely on the presence of ASARCO.

Janey Construction

Janey Construction operates a barren silica quarry in Jefferson County for E. H. Coltharp, Salt Lake City, Utah. In 1972, Janey supplied ASARCO 5,086 tons of barren silica. This tonnage represented only about one-third of Janey's total annual sales tonnage. However, in the first quarter of 1973, Janey began providing barren silica to ASARCO at nearly four times the annual 1972 rate.

Currently, there are two full-time employees hauling silica, and 10 other men employed quarrying and crushing six months of the year. Without the ASARCO smelter operating, there would be some small employment and income effects on Janey Construction and the community.

Pacific Hide and Fur

Pacific Hide and Fur, Helena, provides scrap iron to the ASARCO Smelter for use in its reduction operation. Pacific Hide and Fur indicated that most of the scrap iron comes from local sources and that ASARCO purchases of scrap iron represent about one-third of the firm's total annual sales volume. There are six people employed by Pacific, so there may be some small effects from the company's dependence on ASARCO.

Other Montana Suppliers

A list of a few Montana firms supplying goods to ASARCO is shown in Table 5 (Page 30). The firms are ranked by dollar value in decreasing order of importance. Examination of the table indicates that ASARCO uses a wide variety of Montana suppliers scattered throughout the state. Community income and employment effects of sales losses from these firms, other than Caird Engineering, are not known.

Tax Effects

Accounting data furnished indicates that Lewis and Clark and Jefferson Counties received approximately $344,000 in property taxes in 1972 from the ASARCO and American Chemet facilities at East Helena.

Total property tax billings in the two-county area were $11,647,713 in 1972-73.[7] The tax payments by the two companies represented 3% of the area's total property tax levies. The effects on governmental units of the public revenue loss is difficult to estimate because the amount of individual emigration occurring as a result of an ASARCO displacement is not known.

Other tax effects would include the loss of about $179,000 in unemployment insurance taxes to the state. In this case the

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[7] Montana Taxation, 1973 Edition, Montana Taxpayers Association, Helena, Montana, P. 26.

Table 5

ASARCO'S MONTANA SUPPLIERS

RANKED BY VALUE OF GOODS PURCHASED

1.	Caird Engineering	Helena	Metals Fabrication & Foundry
2.	Montana Hardware	Butte	General Supplies
3.	Gendco	Great Falls	Parts for Oxygen, Acetylene
4.	Northwest Paramount Supply	Helena	Plumbing & Piping Supplies
5.	Big Sky Ready Mix	Helena	Concrete
6.	Gallatin Equipment	Bozeman	Parts for Front End Loader
7.	Bearing Supply	Billings	Industrial Bearings
8.	Abbco	Great Falls	Caterpillar & Front End Loader Parts
9.	Whitson Excavating	Helena	Excavation Work
10.	Linderkind Lumber	Helena	Wood Products & Builders Supply
11.	General Electric	Butte	Electrical Supplies
12.	Allied Equipment	Bozeman	Parts for Payloaders & Frontloaders
13.	Valley Motor	Helena	Motor Parts

Source: Data Provided by ASARCO.

tax loss, however, would represent only the "tip of the iceberg" so to speak, since the state would be required to pay unemployment insurance benefits to those workers unemployed, in addition to trying to find scarce Montana manufacturing jobs for them. But the unemployment of skilled smelter workers resulting from ASARCO's closure, and the subsequent social and psychological effects on individuals and families cannot be measured by statistics or costs and benefits.

Also, of the $10,232,000 in affected 1974 earnings, some 3.9% or $399,048 would accrue to state government via Montana personal income taxes.[8] In the event of an ASARCO withdrawal, the extent of diffusion and reassimilation of displaced employees throughout this state's economy would be difficult to trace, making it hard to draw substantive conclusions concerning the effects on the tax base.

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[8] Based on estimated Montana personal income tax liability (Calendar 1972) of $79,070,700 as a percent of 1972 Montana earnings of $2,019,760,000 (See Figure 3). Tax data was obtained from unpublished, Montana Department of Revenue source.